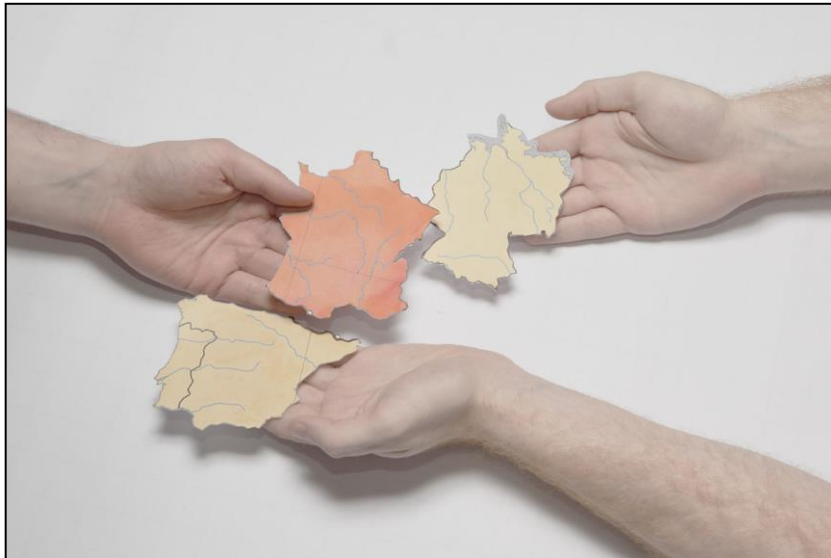


Machen Sie Ihre Daten bereit für INSPIRE mit HALE



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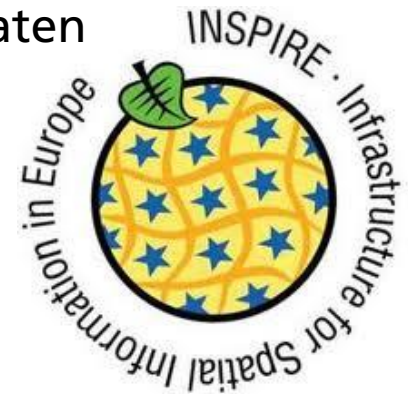
Tel +49 6151 155 – 424 | Fax – 444
christian.malewski@igd.fraunhofer.de
www.igd.fraunhofer.de
www.dhpanel.eu

Was ist INSPIRE?

INfrastructure for **SP**atial **InfoR**mation in the **E**uropean Community
ist das Vorhaben für eine interoperable Geodateninfrastruktur in Europa

Ziel:

- vereinfachte, grenzübergreifende Nutzung von Geodaten



Was bedeutet INSPIRE in der Praxis?



INSPIRE fordert

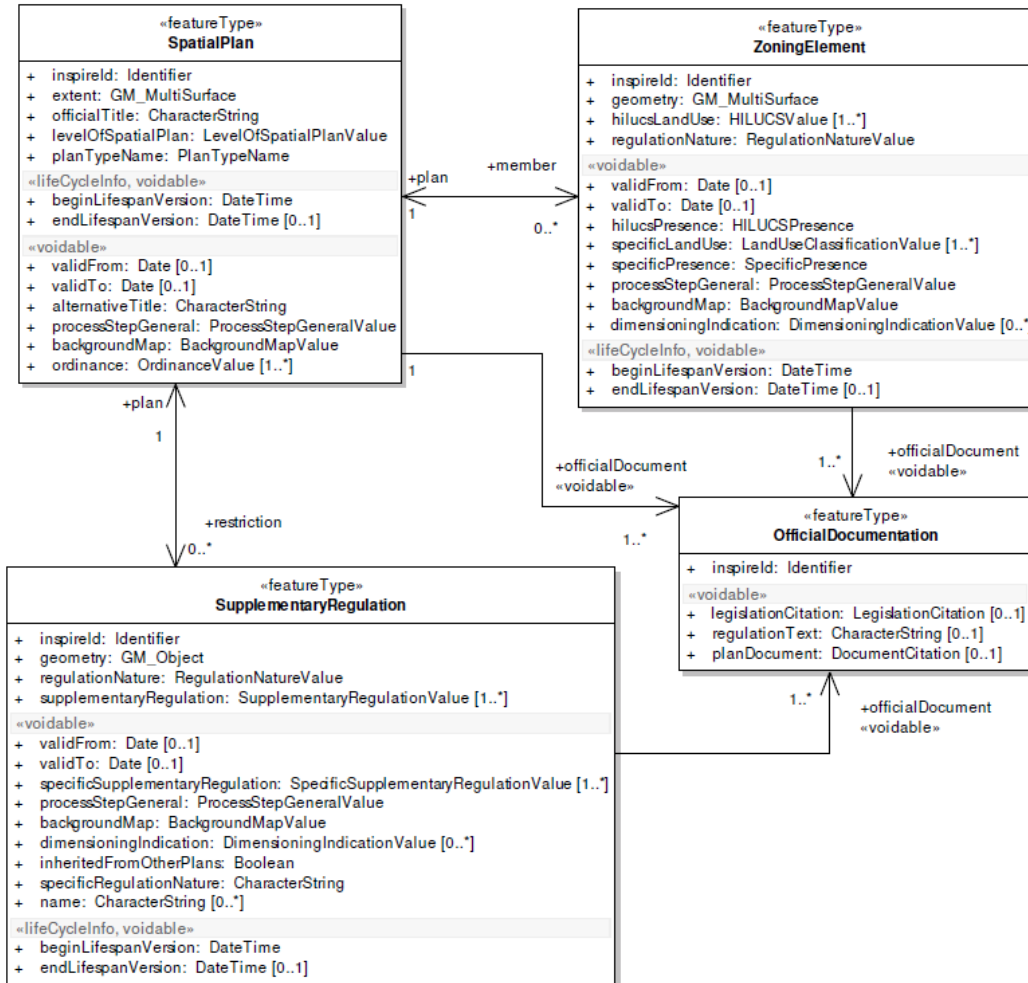
- einheitliche Beschreibung der Metadaten von Geodaten
- deren Bereitstellung im Internet mit Diensten für Suche, Visualisierung und Download
- auch die Daten selbst müssen in einem einheitlichen Format verfügbar sein
- 21 verschiedene Themenbereiche
 - Koordinaten Referenz Systeme
 - Statistische Einheiten
 - Landnutzung
 - ...



Quelle: GDI-DE

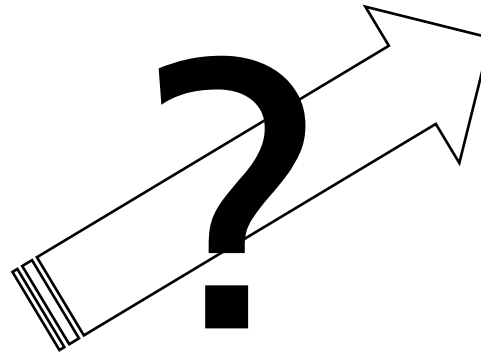
INSPIRE Datenspezifikationen

Planned Land Use

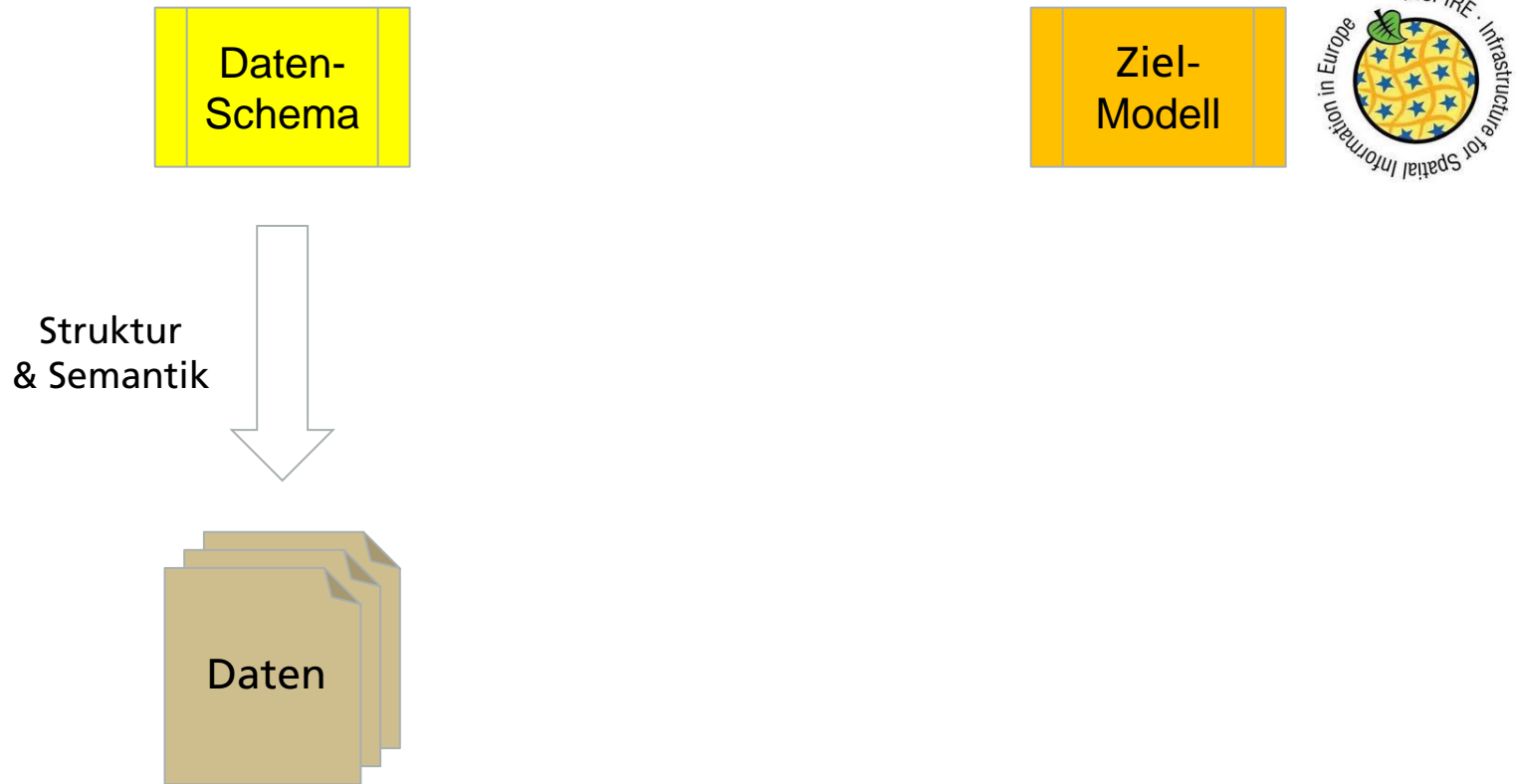


- GML Anwendungsschemata abgeleitet aus UML
- z.T. sehr komplexe Strukturen

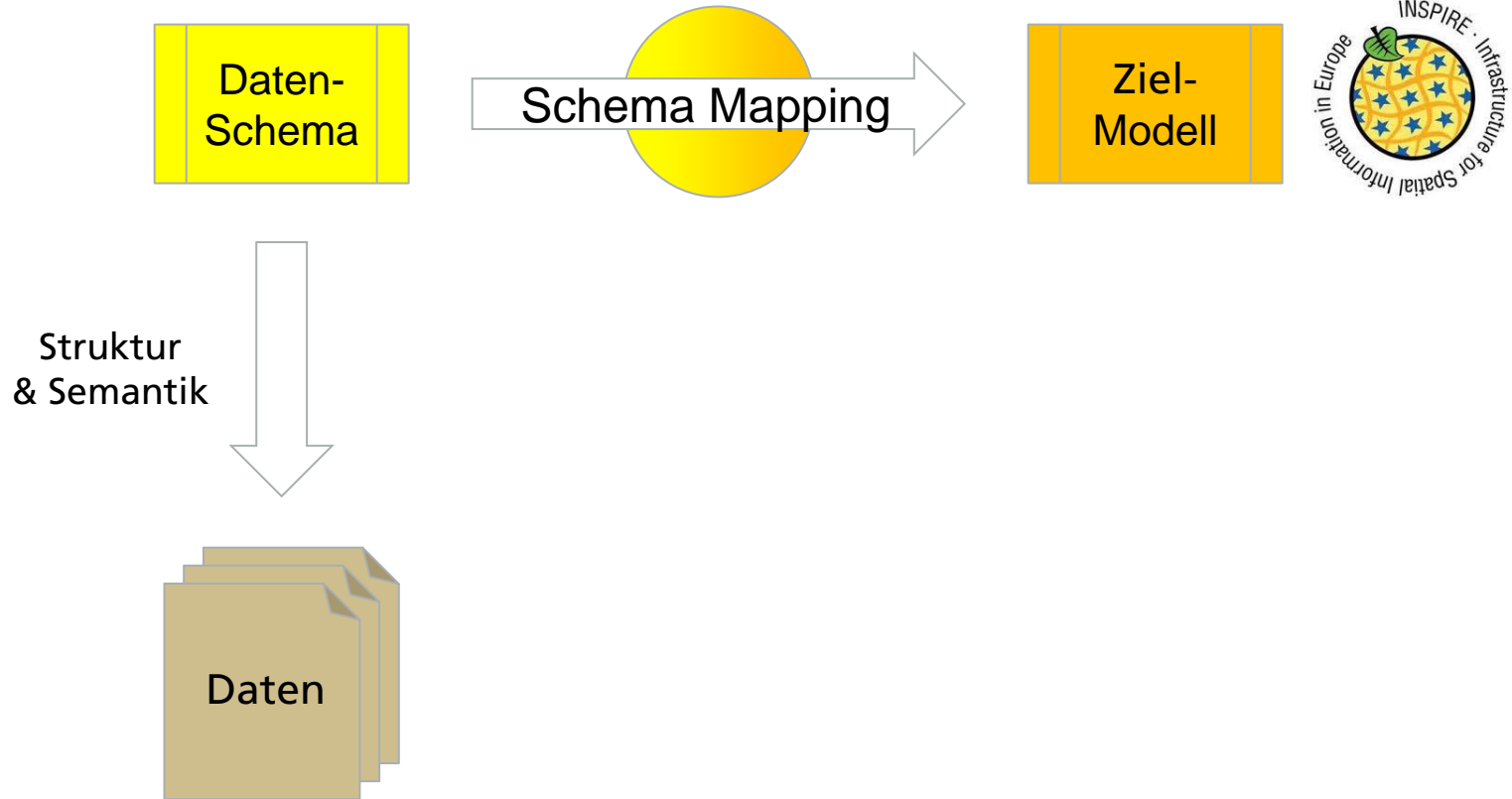
Schema Mapping & Daten Transformation



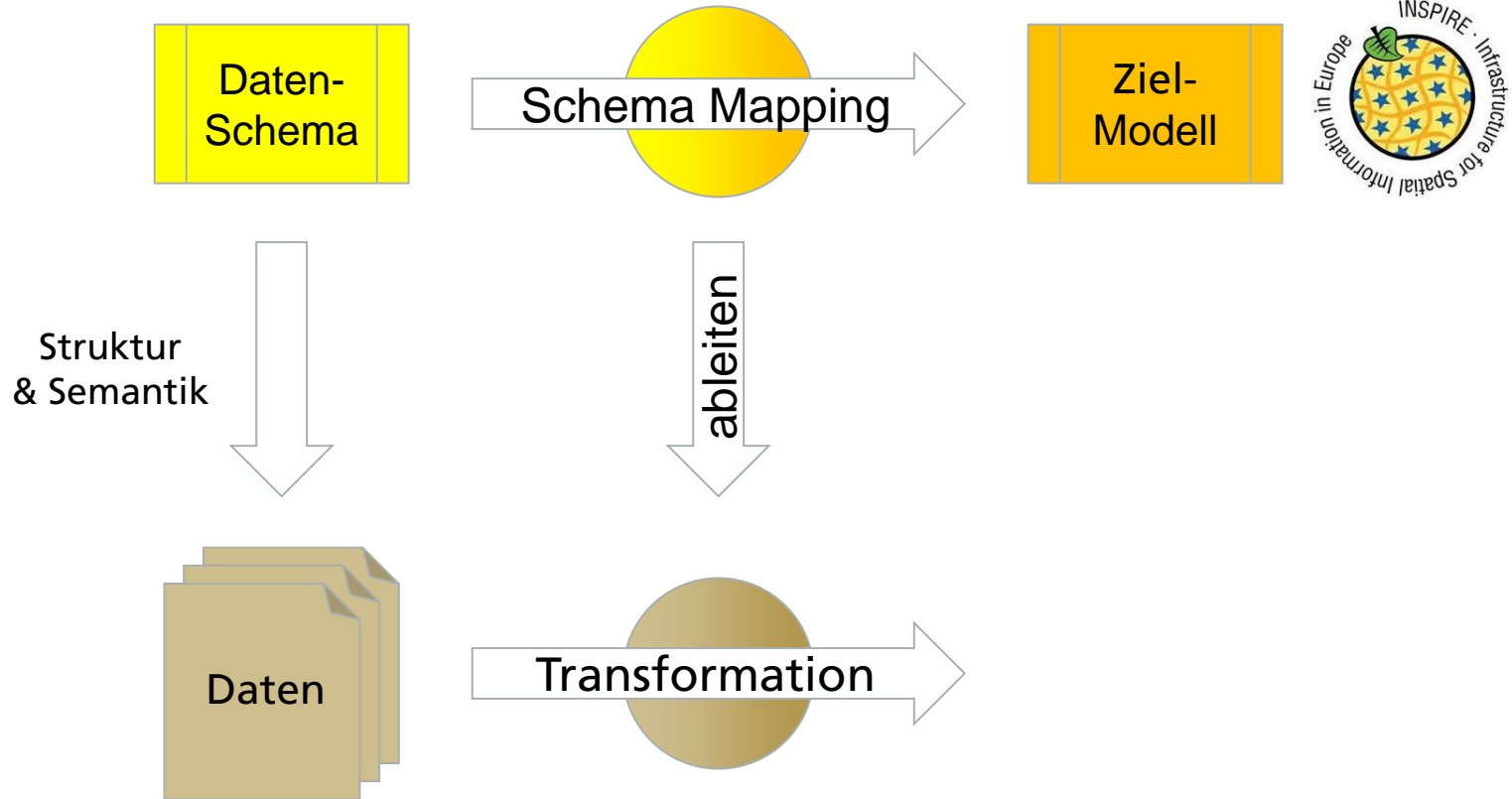
Schema Mapping & Daten Transformation



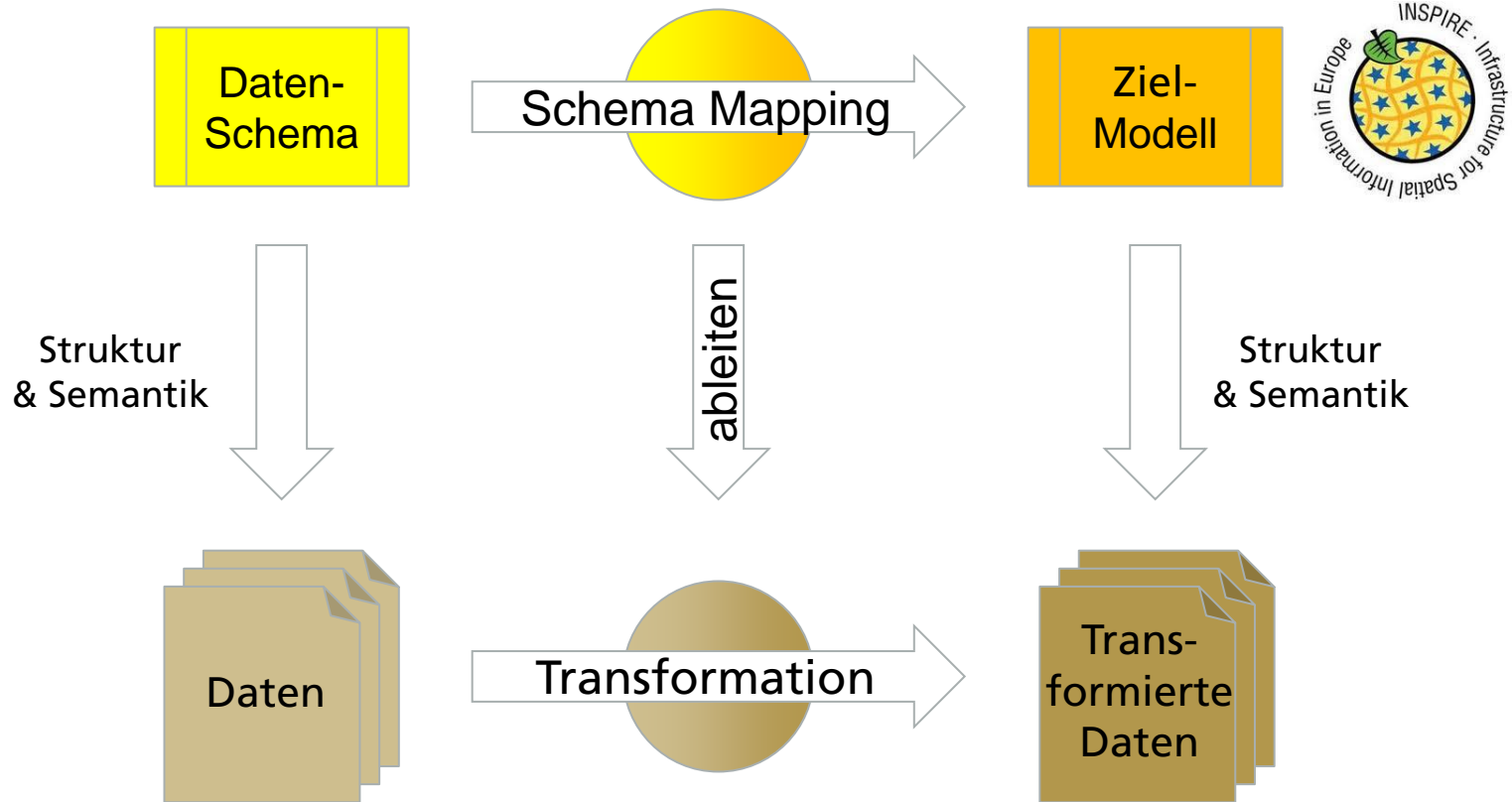
Schema Mapping & Daten Transformation



Schema Mapping & Daten Transformation



Schema Mapping & Daten Transformation



Schema Mapping in HALE

Source Schema:

- documents
 - DOCUMENTCITATION
 - INSPIRED
 - LEGISLATIONCITATION
- rispol_part_subset_attr
- uso_pol_part2
 - AGGIORN_6 (0..1) ×1000
 - AREA (0..1) ×1000
 - COD_TOT (0..1) ×1000
 - filename ×1000
 - PERIMETER (0..1) ×1000
 - PESOPOL (0..1) ×1000
 - PLAN_FROM (0..1) ×1000
 - PLAN_NAME (0..1) ×1000
 - the_geom (0..1) ×1000
 - USO_POL (0..1) ×1000
 - USO_POL_ID (0..1) ×1000

Target Schema:

- OfficialDocumentation
- SpatialPlan
- SupplementaryRegulation
- ZoningElement
 - location (0..1)
 - backgroundMap
 - beginLifespanVersion
 - boundedBy (0..1)
 - description (0..1)
 - descriptionReference (0..1)
 - dimensioningIndication (0..n)
 - endLifespanVersion (0..1)
 - geometry ×1000
 - hilucsLandUse (1..n) ×1000
 - hilucsPresence
 - id ×1000
 - identifier (0..1)
 - inspireId ×1000
 - metaDataProperty (0..n)

Alignment View:

- uso_pol_part2 ×1000 (Source) → Retype → ft ZoningElement (Target)
- AGGIORN_6 (Source) → Date extraction → validFrom (Target)
- AGGIORN_6 (Source) → Groovy script → result → validTo (Target)
- AGGIORN_6 (Source) → Groovy script → result → officialDocument.href (Target)
- COD_TOT (Source) → Rename → specificLandUse (Target)
- USO_POL_ID (Source) → Classification → hilucsLandUse (Target)
- the_geom (Source) → Inspire Identifier → inspireId (Target)
- the_geom (Source) → Rename → geometry (Target)
- the_geom (Source) → Assign → ...LandUse.codeSpace (Target)
- the_geom (Source) → Generate Unique Id → id (Target)
- the_geom (Source) → Assign → plan.href (Target)
- the_geom (Source) → Assign → regulationNature (Target)

Properties Window (ZoningElement Comparison):

Property	Instance 1	Instance 2
ZoningElement	1	2
geometry	(CRS=WGS 84 / UTM zone 32N) MULTIPO	(CRS=WGS 84 / UTM zone 32N) MULTIPO
hilucsLandUse	1_2_Forestry	6_3_1_LandAreasNotInOtherEconomicUse
id	ZoningElement_id_4c9c68cf-9749-42bd-bf...	ZoningElement_id_ab05bfc5-9631-4bf7-bl...
inspireId	+	+
officialDocument	+	+
plan	+	+
regulationNature	generallyBinding	generallyBinding
specificLandUse	9	5
validFrom	Wed Feb 27 00:00:00 CET 2013	Wed Feb 27 00:00:00 CET 2013
validTo	no value	no value
Metadata	+	+
Identifiers	9d9a3c9a-e9e1-4ef1-bf6...	522260d0724c...
		9b45f948-7368-4130-97da-89ddb5e4fcb...

Map View: Shows a map of the area with a red outline indicating the location of the data. Source data is provided by Mapbox and OpenStreetMap.

Welche Zutaten brauchen wir?

Schema Mapping in HALE

The screenshot displays the HUMBOLDT Alignment Editor interface. On the left, the 'Source' schema (Quell-Schemas) lists various elements like 'DOCUMENTCITATION', 'INSPIRED', 'LEGISLATIONCITATION', and 'ZoningElement'. On the right, the 'Target' schema (Ziel-Schema) lists elements like 'OfficialDocumentation', 'SpatialPlan', 'SupplementaryRegulation', and 'ZoningElement'. A central 'Alignment' pane shows a mapping diagram with various transformation rules such as 'Retype', 'Date extraction', 'Groovy script', 'Rename', 'Classification', 'Inspire Identifier', 'Assign', and 'Generate Unique Id'. Below the alignment pane, a 'Properties' table shows the mapping details for 'ZoningElement'.

Property	Source Value	Target Value
geometry	(CRS=WGS 84 / UTM zone 32N) MULTIPO	(CRS=WGS 84 / UTM zone 32N) MULTIPO
hilucsLandUse	1_2_Forestry	6_3_1_LandAreasNotInOtherEconomicUse
id	ZoningElement_id_4c9c68cf-9749-42bd-bf	ZoningElement_id_ab05bfc5-9631-4bf7-bl
inspireId		
officialDocument		
plan		
regulationNature	generallyBinding	generallyBinding
specificLandUse	9	5
validFrom	Wed Feb 27 00:00:00 CET 2013	Wed Feb 27 00:00:00 CET 2013
validTo	no value	no value
Metadata		
Identifiers	9d9a3c9a-e9e1-4ef1-bf6	522260d0724c
		9b45f948-7368-4130-97da-89ddb5e4fcb

At the bottom right, a map shows the 'Source data' with a red outline indicating the mapped area. The map includes labels for 'Tione' and 'Golbengo'.

Quell-Schemas

Ziel-Schema

Welche Zutaten brauchen wir?

Schema Mapping in HALE

The screenshot shows the HALE Alignment Editor interface. On the left, the 'Source' schema (Quell-Schemas) lists attributes like COD_TOT, USO_POL_ID, and geometry. On the right, the 'Target' schema (Ziel-Schema) lists attributes like OfficialDocumentation, SpatialPlan, and ZoningElement. A central mapping area shows transformations such as 'Rename', 'Assign', and 'Generate Unique Id' between the two schemas. Below the schemas, a 'Transformed Data' table shows the resulting data for 'ZoningElement'. On the bottom right, a map displays the spatial data with a red outline and an inset map of Tione.

Quell-Schemas

Ziel-Schema

Welche Zutaten brauchen wir?

(Daten)

ZoningElement	1	2
ft ZoningElement	+	+
geometry	(CRS=WGS 84 / UTM zone 32N) MULTIPO	(CRS=WGS 84 / UTM zone 32N) MULTIPO
hilucsLandUse	1_2_Forestry	6_3_1_LandAreasNotInOtherEconomicUse
id	ZoningElement_id_4c9c68cf-9749-42bd-bf	ZoningElement_id_ab05bfc5-9631-4bf7-bf
inspireId	+	+
officialDocument	+	+
plan	+	+
regulationNature	generallyBinding	generallyBinding
specificLandUse	9	5
validFrom	Wed Feb 27 00:00:00 CET 2013	Wed Feb 27 00:00:00 CET 2013
validTo	no value	no value
Metadata	+	+
Identifiers	9d9a3c9a-e9e1-4ef1-bf6	522260d0724c
		9b45f948-7368-

Schema Mapping in HALE

Quell-Schemas

Ziel-Schema

Domänen-Wissen

Welche Zutaten brauchen wir?

(Daten)

HUMBOLDT Alignment Editor 2.7.0 - PLU Province of Trento - C:\Users\sitemple\Desktop\plu_trento.halez

File Transformation Edit Map Window Help

Schema Explorer

Source

filter text

- documents
- DOCUMENTCITATION
- INSPIRED
- LEGISLATIONCITATION
- rispol_part_subset_attr
- uso_pol_part2
- AGGIORN_6
- AREA (0..1)
- COD_TOT
- files
- PE
- PLAN

Target

type filter text

- OfficialDocumentation
- SpatialPlan
- SupplementaryRegulation
- ZoningElement

Alignment

uso_pol_part2 <1000

Retype

ZoningElement <1000

- Retype
- Date extraction
- Groovy script
- Groovy script
- Rename
- Classification
- Inspire Identifier
- Rename
- Assign
- Generate Unique Id
- Assign
- Assign

- ZoningElement
- validFrom
- validTo
- officialDocument.href
- specificLandUse
- hilucsLandUse
- inspireId
- geometry
- LandUse.codeSpace
- id
- plan.href
- regulationNature

Properties

ZoningElement

- geometry
- hilucsLandUse
- id
- inspireId
- officialDocument
- plan
- regulationNature
- specificLandUse
- validFrom
- validTo
- Metadata
- Identifiers

Type hierarchy

Functions

Report List

Map

Data, imagery and map information provided by Mapbox, OpenStreetMap and contributors

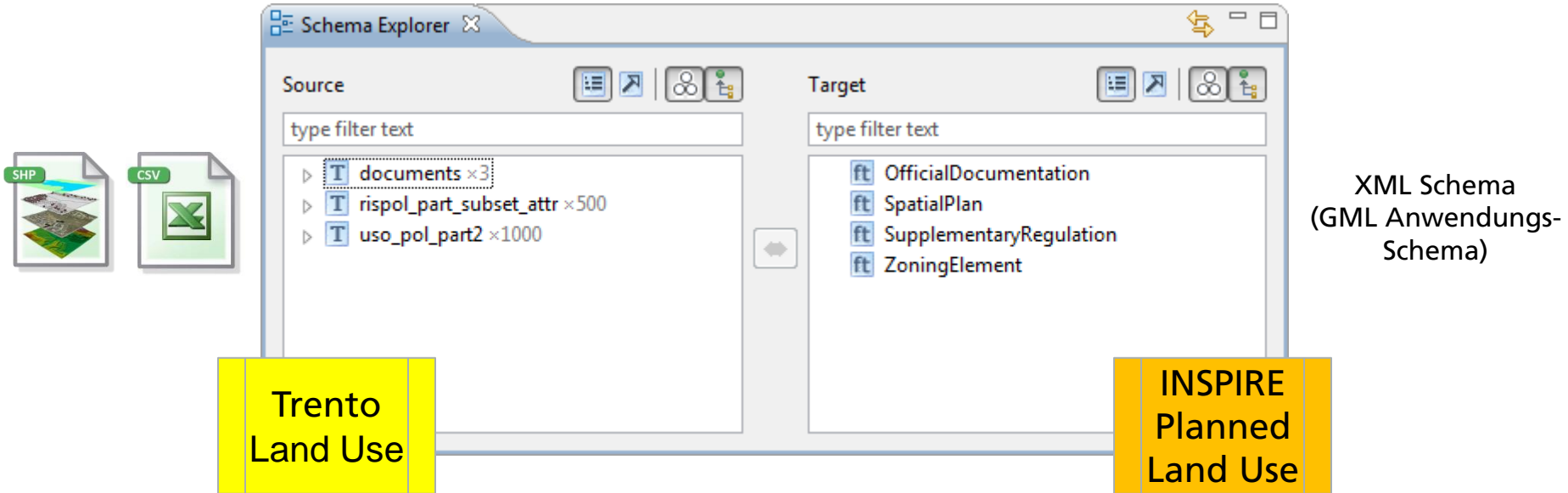
Tione

Golbenedo

Source data

CST

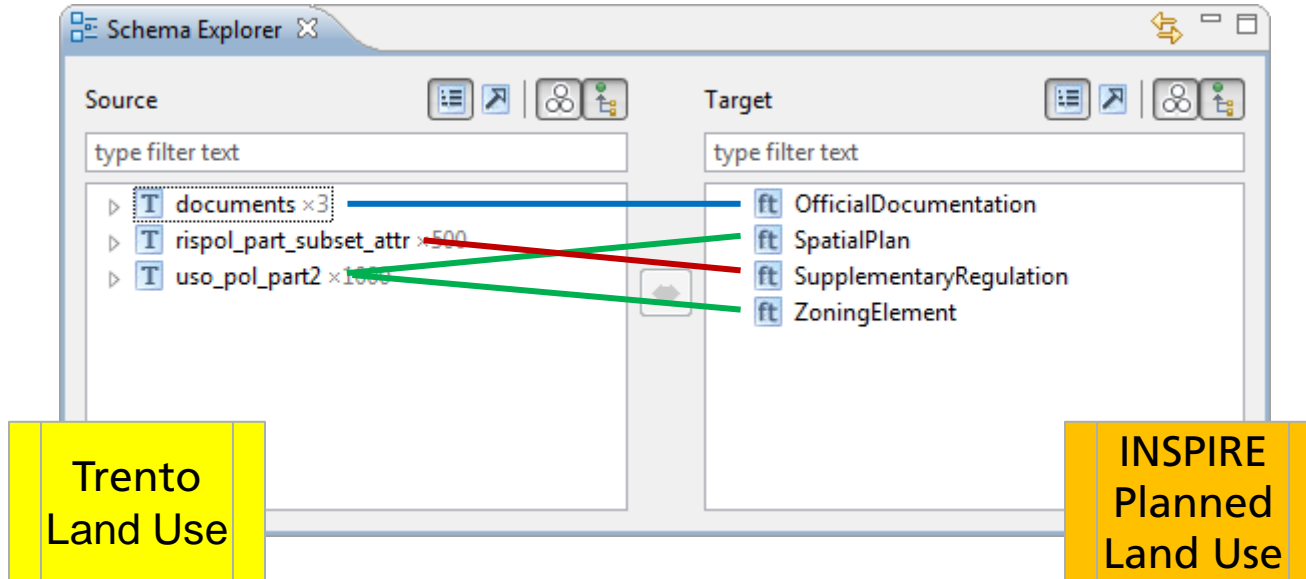
Anwendungsbeispiel – Planungsdaten aus Trento



(Objektarten in den verschiedenen Schemata)

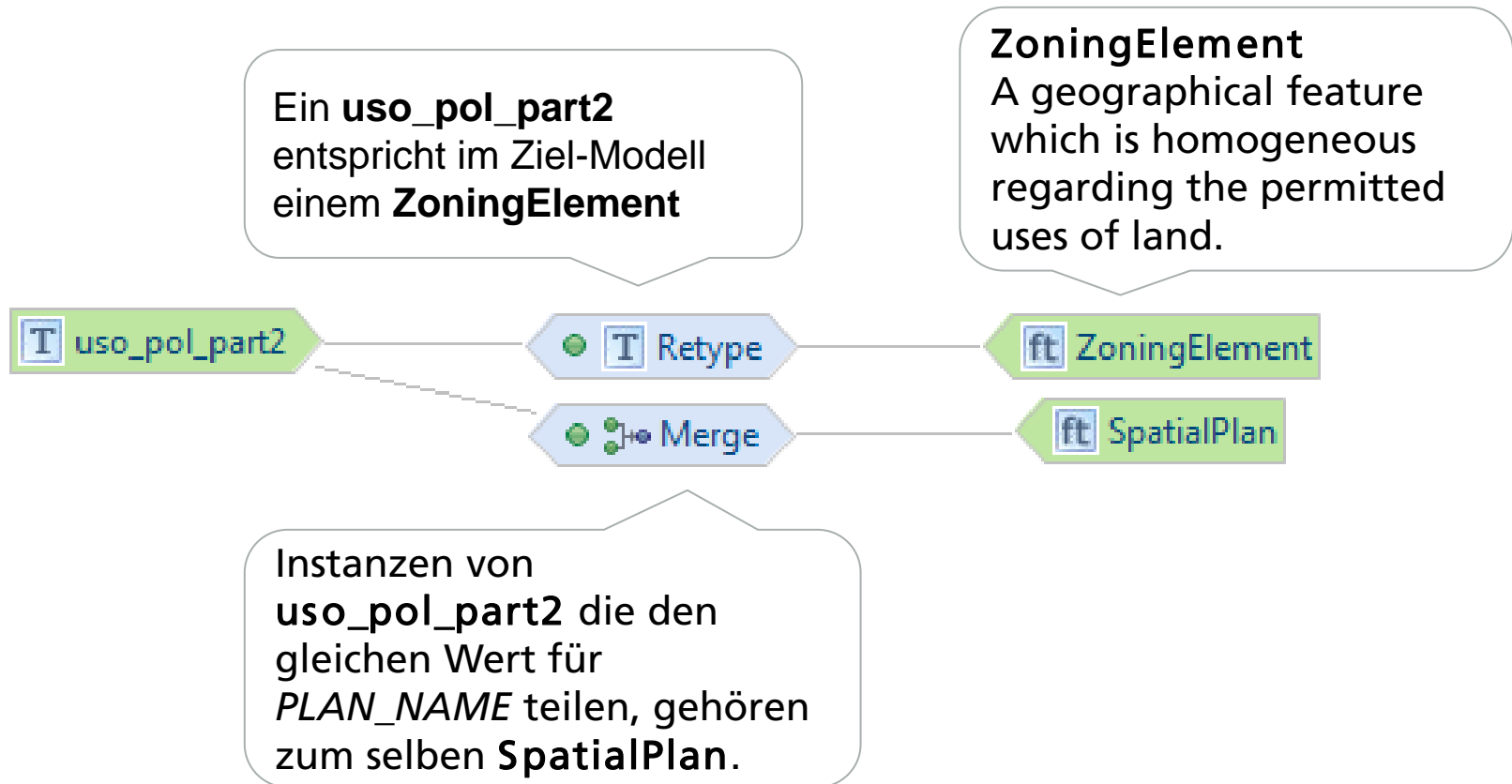


Schritt 1 - Bestimmen der relevanten Ziel-Objektarten



(Objektarten in den verschiedenen Schemata)

Schritt 2 - Relationen zwischen Objektarten spezifizieren



Optional - Datenanalyse

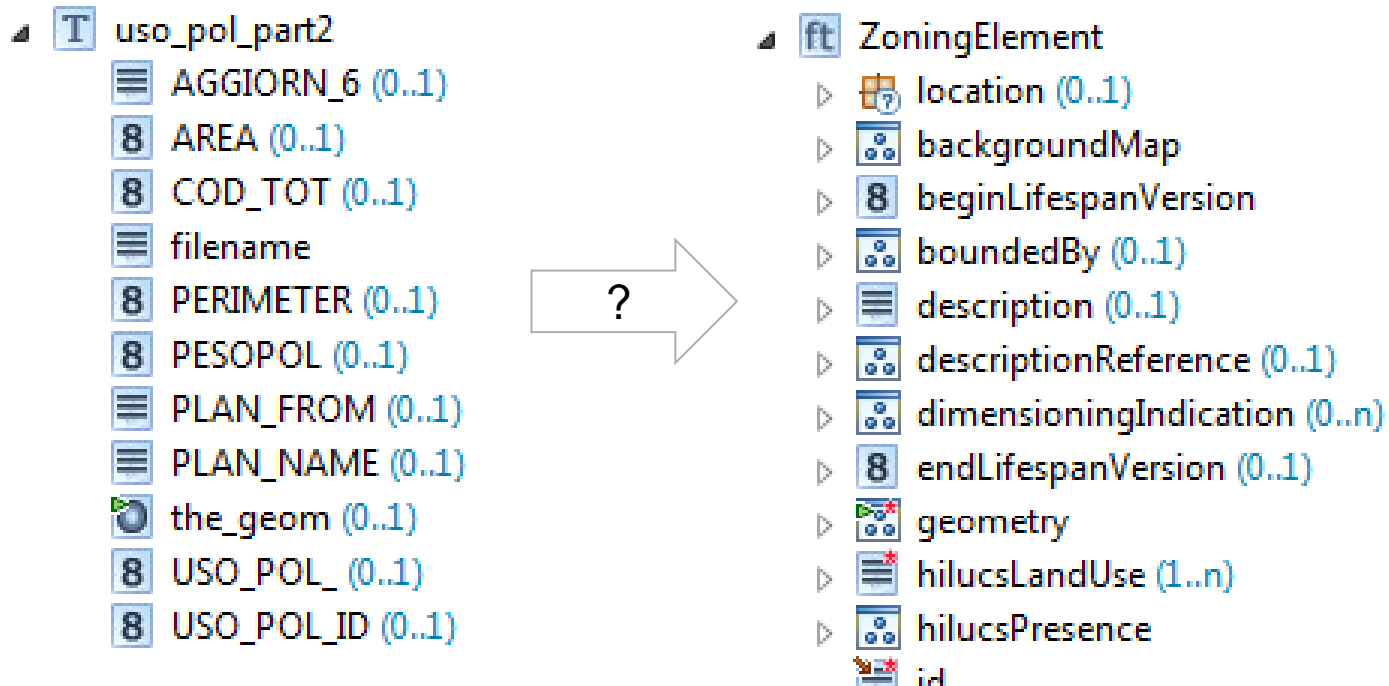
The screenshot displays a GIS application interface. On the left, a 'Properties' window for the layer 'COD_TOT' shows a list of values: 1(x323), 2(x40), 3(x174), 4(x191), 5(x22), 6(x4), 7(x7), 9(x88), 101(x9), 103(x99), and 999(x43). The 'General' tab is selected. In the center, a map window shows a street map of Trento with a red polygon highlighting a specific area. On the right, a 'Source Data' window displays a table with two columns representing different parts of the 'uso_pol_part2' layer.

uso_pol_part2	1	2
uso_pol_part2	+	+
AGGIORN_6	2013-02-27	2013-02-27
AREA	5.1500684378582E7	1.4219851184854E7
COD_TOT	5	9
filename	uso_pol_part2	uso_pol_part2
PERIMETER	108174.22488301	48404.735750712
PESOPOL	0.02	0.15
PLAN_FROM	2006-02-15	2006-02-15
PLAN_NAME	PGUAP	PGUAP
the_geom	{CRS=WGS 84 / UTM zone 32N} MUI	{CRS=WGS 84 / UTM zone 32N} MUI
USO_POL_	30949	33372
USO_POL_ID	30948	33371
Metadata	+	+

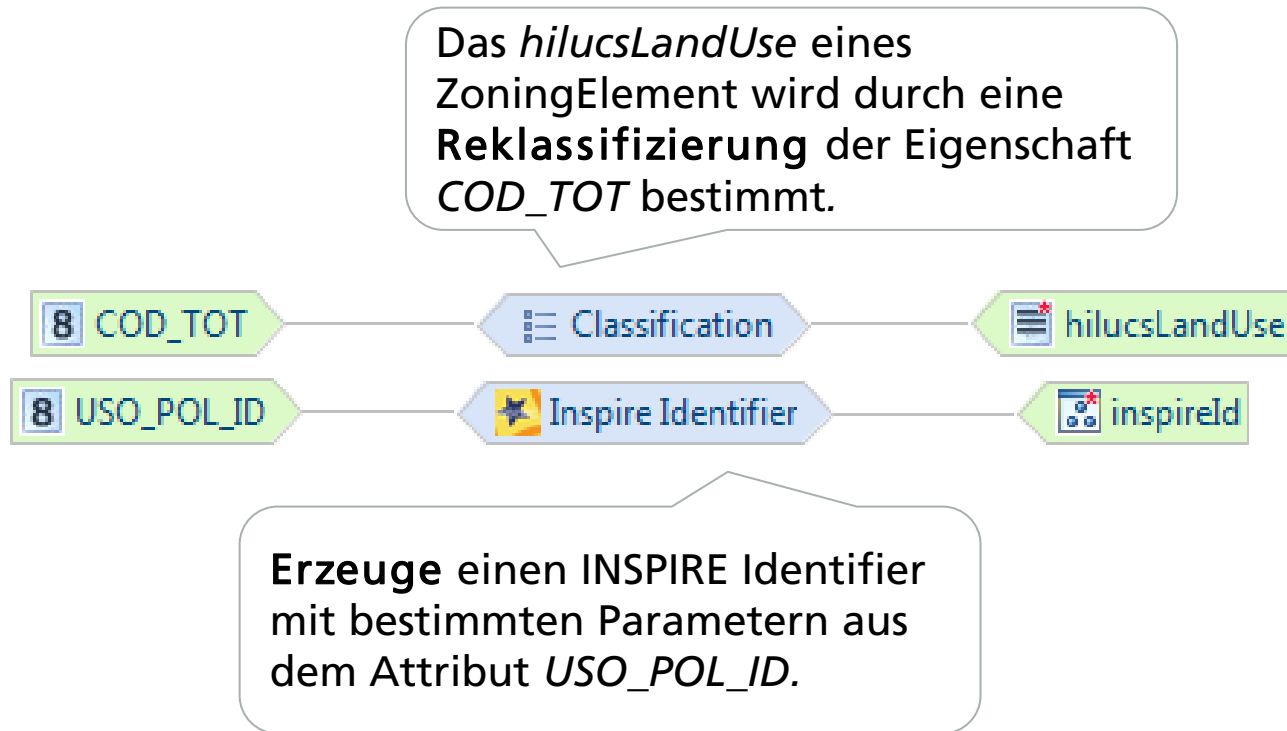
Trento
Land Use

Schritt 3 - Identifizieren der Eigenschaftsrelationen

- Welche Informationen werden auf Ziel-Seite benötigt?
- Welche Informationen sind in meiner Datenquelle vorhanden?
- Wie können die Ziel-Eigenschaften befüllt werden?

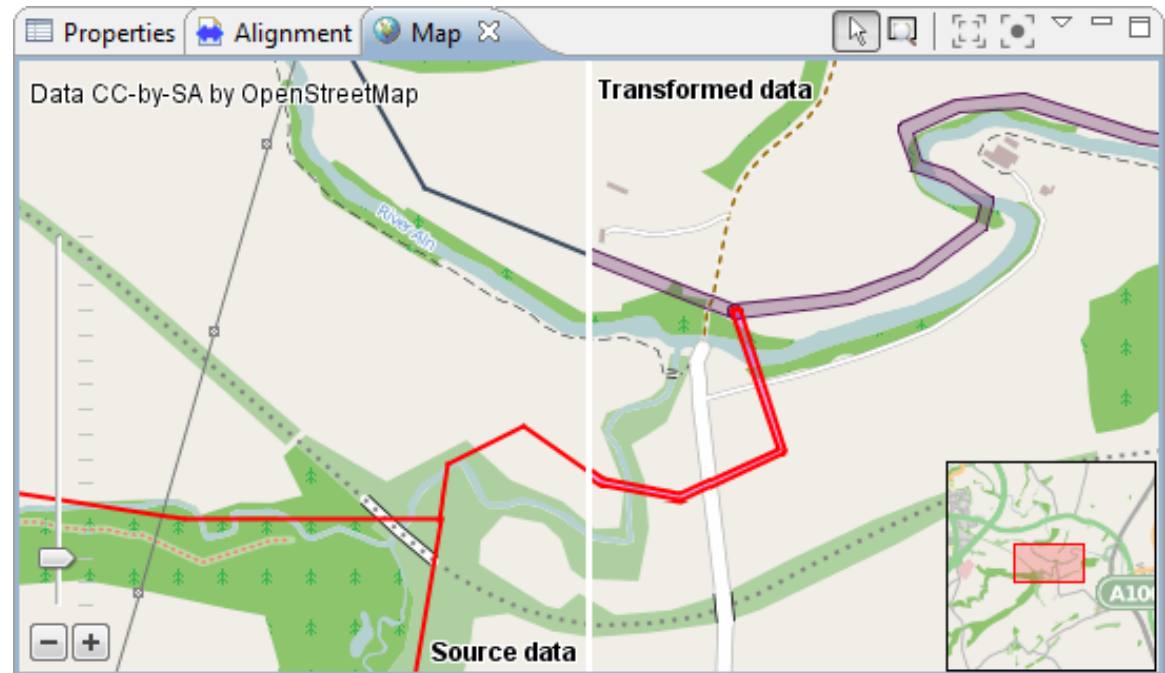


Schritt 3 - Identifizieren der Eigenschaftsrelationen



Direktes Feedback zum Mapping

- Beispieldaten können mit jeder Änderung direkt transformiert werden
- Visuelles Feedback
 - Vollständigkeit des Mappings
 - Geometrie-Transformation

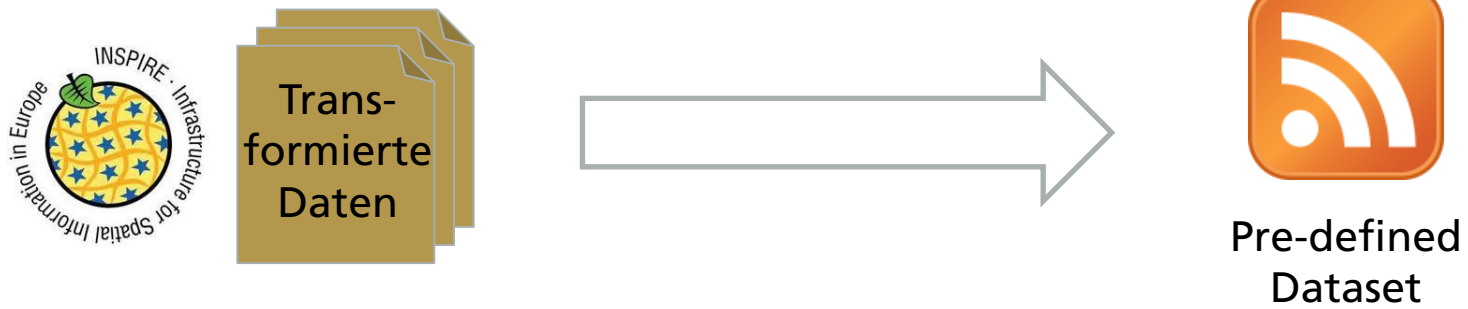


Direktes Feedback zum Mapping

- Sind Daten nach der Transformation valide?
- Vergleich von Quell-Daten und Transformationsergebnis

Transformed Data	
Watercourse	
Watercourse	⚠ +
inspireId	+
width	⚠ +
WidthRange	⚠ +
upper	4.573170731707317
uom	m
lower	+
uom	m
id	_d1a6215e-3185-429f-b9b1-f160437e4f99
geometry	{CRS= OSGB 1936 / British National Grid} POLYG
length	⚠ 848.2407036092494
description	Contains Ordnance Survey data © Crown copyr

INSPIRE Download Services



INSPIRE Download Services



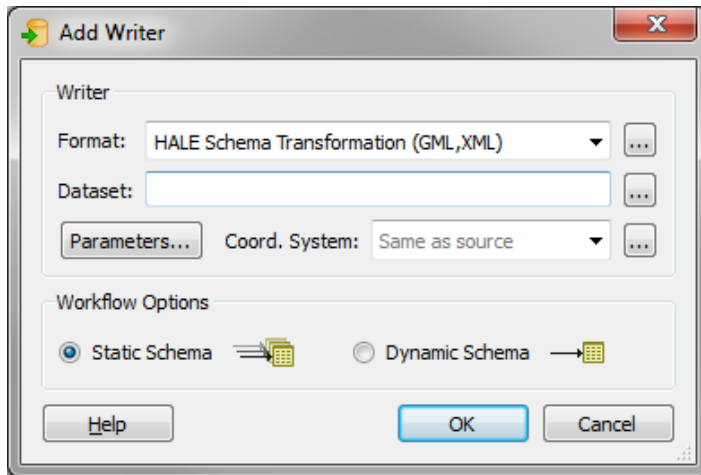
z.B. Open Source mit
deegree

WFS 2.0
Direct Access
Download
Service

Warum Schema Mapping mit HALE?

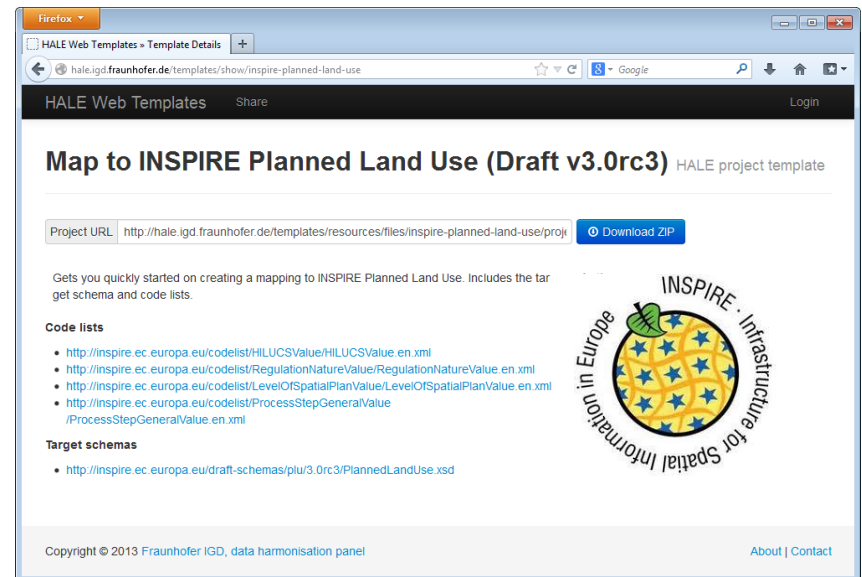
- Interaktives Mapping mit direktem Feedback
- Deklarative Relationen machen das Mapping leichter verständlich
- Generische Unterstützung für XML/GML
 - Arbeiten mit beliebigen, komplexen Schemas
 - Erweiterungen/Anpassung von Standardschemas
- Geringer Speicherbedarf
 - Durch Streaming auch Transformation großer Datenmengen
- Einfach erweiterbar durch Plug-ins
 - Erweiterungspunkte für Transformationsfunktionen, Ein- und Ausgabeformate, Konverter, viele Teile der Benutzeroberfläche, usw.

Neues Release HALE 2.7



Integration mit FME 2014

Einfacher Start für das Mapping
zu INSPIRE mit vorgefertigten
HALE Projekt-Templates



data harmonisation panel



- Wir beraten Sie gerne
 - zu Ihrem Anwendungsfall für Datentransformation
- Wir unterstützen Sie gerne
 - beim Erstellen von Schema Mappings
 - beim Erweitern der HALE-Funktionalitäten
- Wir arbeiten gerne mit Ihnen zusammen
 - bei der Umsetzung Ihrer Lösung zur Transformation und Integration von Daten

Vielen Dank für Ihre Aufmerksamkeit

- Fragen?
christian.malewski@igd.fraunhofer.de
- Schnellstart mit dem HALE-Tutorial:
<http://www.dhpanel.eu/humboldt-framework/hale-tutorial.html>
- weitere Informationen zu HALE finden Sie unter
<http://www.esdi-community.eu/>

